Advance

SIGNAL GENERATOR TYPE D1/D

(Including D1/DE and D1/DNA)

The Advance Signal Generator Type D1/D is an instrument suitable for making R.F. measurements in the range of 10-300Mc/s.

The output voltage and frequency are directly calibrated, and a linear scale and vernier are provided to give maximum resetting accuracy. To facilitate tuning to narrow band receivers, a slow motion drive with a ratio of 50 : 1 is fitted.

The R.F. output may be modulated internally at 1000 c/s. A switch is provided to select either 30 per cent. sine wave or 50/50 square wave modulation.

Standard Pye plugs and sockets are used for R.F. output. The instrument is mounted on a thick aluminium panel enamelled grey and fitted in a grey enamelled steel case, provided with a lid which protects the controls. The leads and termination unit are housed in a box at the back of the case.

SPECIFICATION

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Frequency ranges.

Range A. ...	10-18 Mc/s	Range D. ...	55-105 Mc/s.
Range B. ...	18-32 Mc/s	Range E. ...	100-190 Mc/s.
Range C. ...	30-56 Mc/s	Range F. ...	170-300 Mc/s

Directly calibrated with an accuracy of ± 1 per cent.

R.F. OUTPUT

The output voltage is obtained from the end of a 75 ohm matched transmission line. The output is continuously variable from 1 microvolt to 100 millivolts by means of a five position decade multiplier and a continuously variable control, calibrated in microvolts and db.

Accuracy 10-150 Mc/s ± 3db ± 1μV
150-300 Mc/s ± 4db ± 2μV

OUTPUT IMPEDANCE ...

The output impedance at the end of the transmission line is 75 ohms when unterminated, and when terminated is 37½ ohms.

MODULATION

The R.F. output may be obtained as follows :—

1. C.W.
2. Modulated 30 (± 3) per cent. at 1,000 c/s (± 100 c/s)
3. Modulated approximately 50/50 square wave at 1000 c/s (± 100 c/s).

SPECIFICATION

R.F. LEAKAGE

The oscillator section is triple shielded and external stray magnetic and electrostatic fields are negligible.

VALVES AND ACCESSORIES

Each instrument is supplied with the following :—

1 Valve type 12AT7
2 Valves type 6J5G
1 Valve type 5Z4G (not used on D1/DNA)
1 Pilot lamp type M.E.S. 11mm. 6.5 volt.
1 75 ohm connector type PL5
1 75 ohm termination unit type TP2
1 Mains lead PL15

POWER SUPPLY

D1/D : 80, 110, 210, 230, 250 volts. 40-2000 c/s.
D1/DE : 110-125, 130-140, 160, 220 volts. 40-2000 c/s.
D1/DNA : 117 volts, 25-60 c/s.

Consumption approximately 25 watts.

WEIGHT

34 lb. nett.

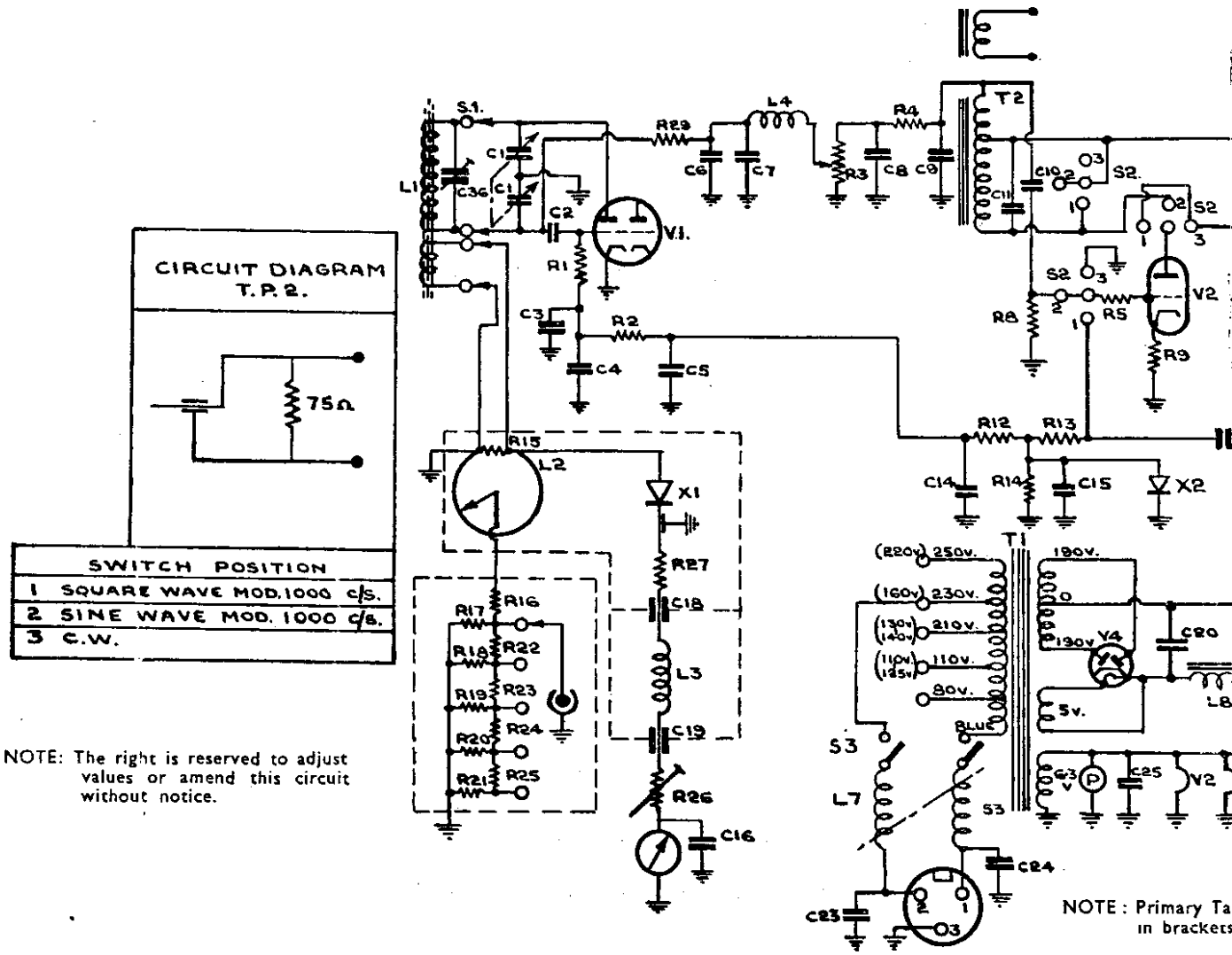
DIMENSIONS

$14\frac{1}{4}$ inches wide, $12\frac{3}{4}$ inches high, 8 inches deep overall.

TERMINATION UNIT TYPE TP2

This consists of a 75 ohm non-reactive resistance with Pye plug for connection to the R.F. lead type PL5. Solder tags are provided for the leads required for connection to the equipment under test.

ADVANCE DID Signal Generator 10 DK – 300 MHz

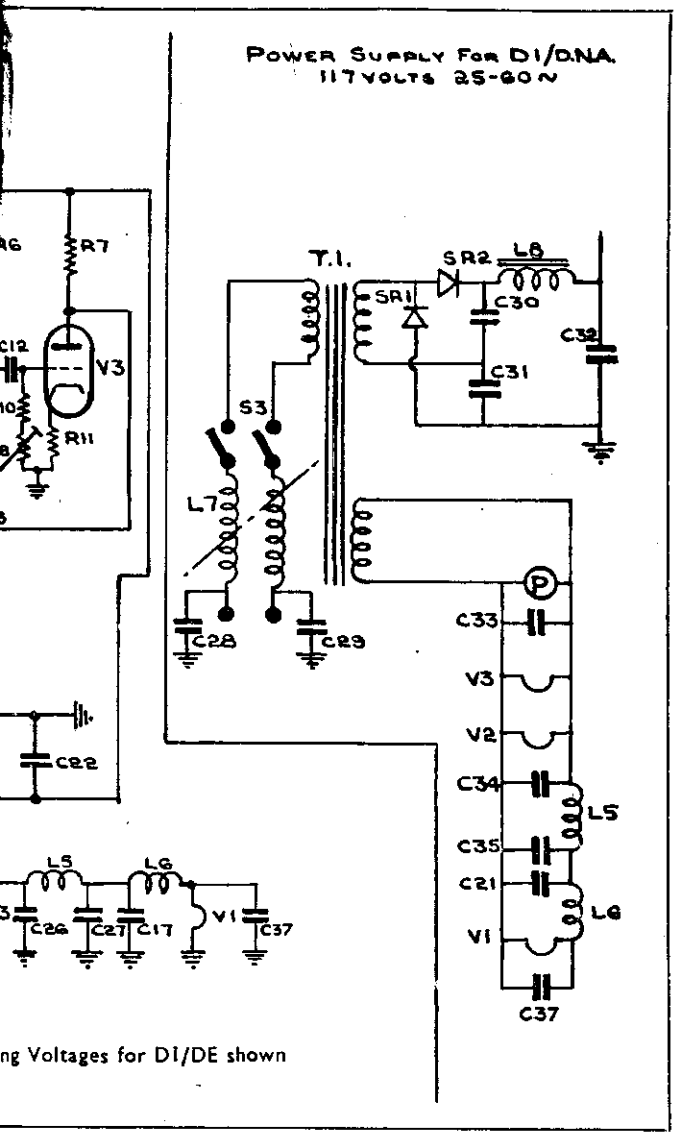


RESISTORS

R. 1	3.3K	ohm	10%	¼W	Miniature
R. 2	1K	„	„	„	R.M.A.9
R. 3	50K	„		1½W	Wirewound
R. 4	1K	„	„	¼W	R.M.A.9
R. 5	100	„	„	„	R.M.A.9
R. 6	33K	„	„	½W	R.M.A.8
R. 7	33K	„	„	„	R.M.A.8
R. 8	100K	„	„	¼W	R.M.A.9
R. 9	3.3K	„	„	„	R.M.A.9
R.10	18K	„	„	„	R.M.A.9
R.11	3.9K	„	„	„	R.M.A.9
R.12	1K	„	„	„	R.M.A.9
R.13	10K	„	„	„	R.M.A.9
R.14	3.3K	„	„	„	R.M.A.9
R.15	100	„	„	„	R.M.A.9

RESISTORS

R.16	120	ohm	1%	⅛W	High Stab. Carbon
R.17	240	„	2%	„	„ „ „
R.18	92		„	„	„ „ „
R.19	92	„	„	„	„ „ „
R.20	92	„	„	„	„ „ „
R.21	82.5	„	1%	„	„ „ „
R.22	743	„	„	„	„ „ „
R.23	743	„	„	„	„ „ „
R.24	743	„	„	„	„ „ „
R.25	743	„	„	„	„ „ „
R.26	5K	„		⅓W	Carbon Pot.
R.27	47	„	± 20%	¼W	R.M.A.9
R.28	10K	„		⅓W	Miniature Potentiometer
R.29	5K	„	± 10%	2W	High Stability



ng Voltages for D1/DE shown

CAPACITORS

C. 1	65pF+65pF				Ganged Variable
C. 2	15pF	500v.	D.C.	20%	Ceramic
C. 3	100pF	350v.	D.C.	10%	Moulded Mica
C. 4	500pF	„	„	„	„ „
C. 5	500pF	„	„	„	„ „
C. 6	100pF	„	„	„	„ „
C. 7	100pF	„	„	„	„ „
C. 8	500pF	„	„	„	„ „
C. 9	500pF	„	„	„	„ „
C.10	.02μF	„	„	20%	Paper Tubular
C.11	.01μF	„	„	5%	Moulded Mica
C.12	.01μF	„	„	20%	Paper Tubular
C.13	.02μF	„	„	„	„ „
C.14	500pF	„	„	10%	Moulded Mica
C.15	500pF	„	„	„	„ „
C.16	500pF	350v.	D.C.	10%	Moulded Mica
C.17	500pF	„	„	„	„ „
C.18	300pF	500v.	„	20%	Ceramic Lead Through
C.19	300pF	„	„	„	„ „
C.20	8μF	350v.	„		Electrolytic
C.21	500pF			10%	Moulded Mica
C.22	8μF	350v.	„		Electrolytic
C.23	500pF	„	„	10%	Moulded Mica
C.24	500pF	„	„	„	„ „
C.25	500pF	„	„	„	„ „
C.26	500pF	„	„	„	„ „
C.27	500pF	„	„	„	„ „
C.28	500pF	750v.	„	„	„ „
C.29	500pF	„	„	„	„ „
C.30	16μF	350v.	„		Electrolytic
C.31	16μF	500v.	„		„
C.32	24μF	„	„		Common with C.31
C.33	500pF			10%	Moulded Mica
C.34	500pF			„	„ „
C.35	500pF			„	„ „
C.36	.5-3pF				Trimmer Cyldon No. 30
C.37	500pF			10%	Moulded Mica

COILS

L.1	R.F. Coil (6 ranges)	L.5	L.T. : R.F. Choke
L.2	Slide Wire Inductance	L.6	L.T. : R.F. Choke
L.3	Filter Choke	L.7	Mains R.F. Choke
L.4	H.T. : R.F. Choke	L.8	H.T. Smoothing Choke

SWITCHES

S.1	R.F. Turret	S.3	Mains Switch
S.2	Modulation Switch		

VALVES

V.1	12AT7	R.F. Oscillator
V.2	6J5GT	Modulation Oscillator
V.3	6J5GT	Modulation Oscillator
V.4	5Z4	Full Wave Rectifier

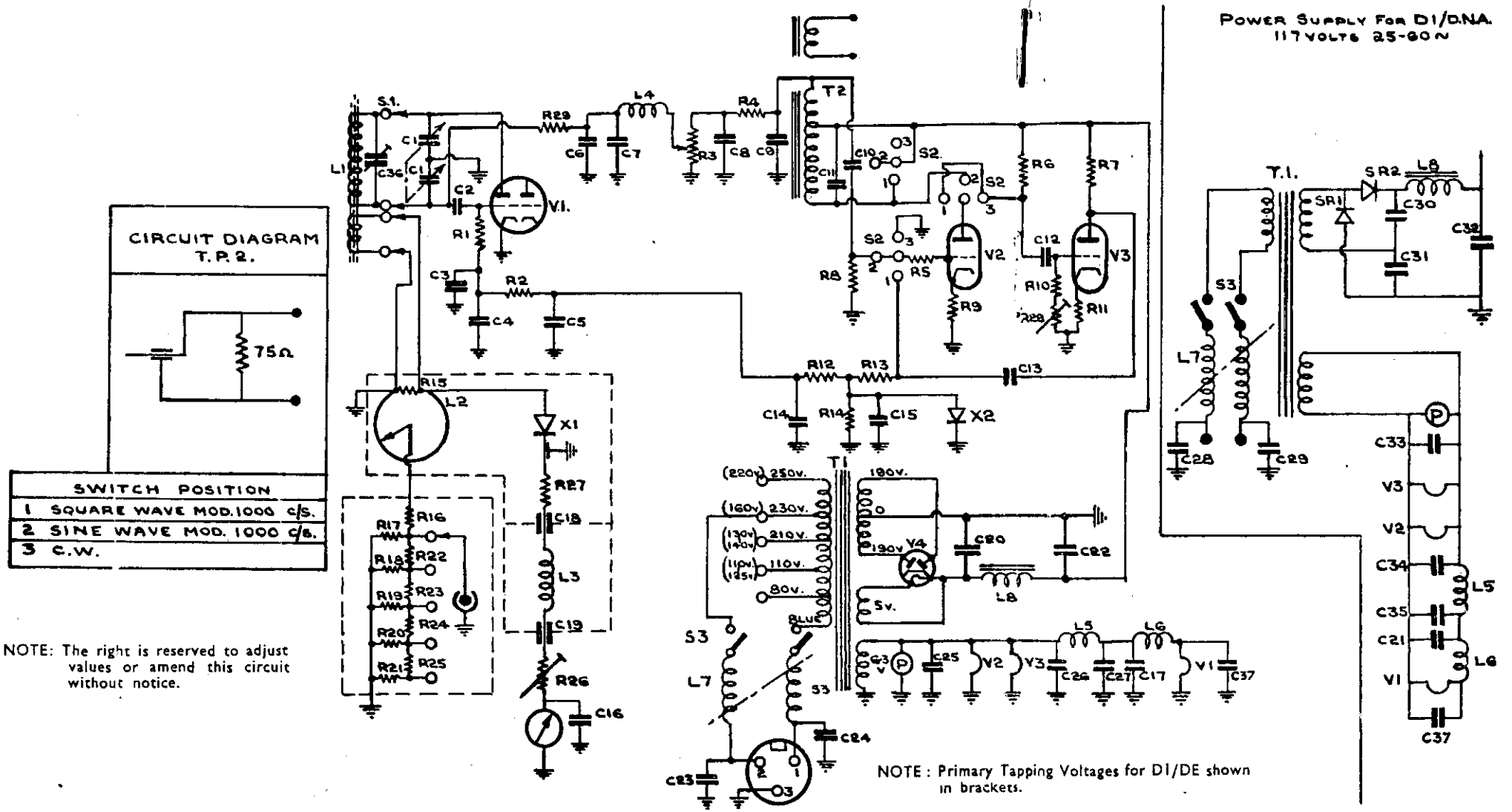
TRANSFORMERS

T.1	Mains Transformer. Input: 80v., 110v., 210v., 230v., 250v., 40-2,000c/c on D1/D. 110-125v., 130-140v., 160v., 220v., 40-2,000c/s on D1/DE. 117v. 25-60 c/s on D1/DNA.
T.2	Modulation Transformer.

RECTIFIERS

X.1	Silicon Crystal B.T.H. CS2A.
X.2	Germanium Crystal B.T.H. CG6C.
SR.1	Selenium Rectifier S.T.C. Type R.M.1.
SR.2	Selenium Rectifier S.T.C. Type R.M.1.

ADVANCE D1D Signal Generator 100 KHz – 300 MHz



OPERATING

MAINS VOLTAGE

Model D1/D is designed for operation from supplies of 80v., 110v., 210-250v. The 80v. input is for service use, where supplies of 80v., 500-2000 c/s are available.

The other inputs are for A.C. mains supplies from 40 c/s upwards. The instrument is normally despatched with pins 1 and 2 of the mains plug on the front panel connected to the 230v. tap on the mains transformer, the pin marked E is earthed to the instrument internally. The mains lead type PL15 is normally supplied as a two core cable wired to pins 1 and 2 of the input socket. Thus the instrument, unless otherwise ordered, is despatched for operation from supplies of 230v.

For other supplies it is necessary to remove the instrument from the case (see Maintenance) and alter the tapping to the mains transformer. The green flexible connection must be unsoldered from the 230v. tap and resoldered to the 80, 110, 210 or 250v. tap as required. Model D1/DE is for use on supplies of 110-125, 130-140, 160, 220 volts, 40-2000 c/s.

Model D1/DNA is for use only on supplies of 117 volt, 25-60 c/s.

FREQUENCY

Any frequency in the range of the instrument may be selected to an accuracy of $\pm$ 1% by means of directly calibrated scales and a band selector switch. A linearly calibrated scale with vernier is also provided to enable a high accuracy of re-setting to be obtained. If a given frequency is to be required on a number of occasions, the vernier scale reading should be noted, and when re-setting, the instrument should be set to the reading. Fine frequency adjustment is easily obtained using the slow motion drive, which gives a ratio of 50 : 1. When desired, however, the knob on the main dial may be used to swing from one end of the band to the other.

The carrier level is monitored by a crystal diode meter connected across the slide wire and the set carrier control is at the lower right-hand corner of the panel. With the modulation switch set at either sine or C.W. the R.F. output is correct when the carrier level meter is adjusted to the black line. When the switch is set to square wave modulation the carrier level is correct when the meter is set to the

red line. (That is, the R.M.S. value of the carrier is the same as in the C.W. position.

The R.F. output at the plug marked " R.F." is controlled by two attenuators. The slide wire, labelled " OUTPUT VOLTAGE," is calibrated 1-10 and also 0-20 dbs. Underneath this control is the multiplier calibrated in 5 steps of 10-1, giving X1, X10, X100 microvolts, and X1, X10 millivolts. The output is therefore continuously variable from one microvolt to 100 millivolts. There is no db. marking on the multiplier, but it will be obvious that it is 20 dbs. per step. The output impedance at all settings is 75 ohms, the output voltage is ONLY correct when the attenuator is properly terminated with a 75 ohm line. The connector type PL5 supplied with the generator has a characteristic impedance of 75 ohms.

A termination unit type TP2 is also supplied and this is virtually a 75 ohm non-reactive resistance. This termination unit, which should be plugged on to the end of the type PL5 connector, can be used where the input impedance of the receiver or other device under test is very much greater than 75 ohms. It should be pointed out, however, that leads soldered to the termination unit must be kept exceedingly short as a length of one centimetre may introduce an error of 10% or greater in output voltage when working at 300 Mc/s.

MODULATION

The left hand switch adjacent to the chromium handle on the panel controls the modulation. With the switch set at " CW " all modulation is switched off. With the switch set at " SINE " the carrier is internally modulated to 30% at 1,000 cycles. With the switch set at " S.Q." the carrier is modulated 100% with a 50/50 square wave.

MAINTENANCE

To remove the generator from the case, place the instrument on its back and unscrew the fourteen screws round the edge of the panel. The generator may now be removed from the case and placed face downwards on the bench so that it rests on the handles. To inspect the coil turret or change the 12AT7 valve, first remove the large screen on the left-hand side, which is secured by eight 4BA round-head screws. The cover of the coil box can now be seen and may be

removed by unscrewing the six 4BA nuts holding it in position. If at any time the coil switch contacts on the condenser platform become dirty, they may be carefully cleaned and a very small quantity of lanolin applied to them. The coil turret is removed by turning the band switch mid-way between positions ' C " and " D ", removing the three 4BA round-head screws adjacent to the spindle and carefully withdrawing the turret. It will be observed that there is a locating pin on the brass bush holding the coil turret, thus preventing the coil turret from being put back the wrong way round. Great care must be taken when removing or replacing the coil turret, or damage to the contacts may ensue. The slide wire box is located behind the two modulation valves on the right hand side of the instrument. To examine the slide wire, remove the two 6J5G valves and take off the cover of the box, unscrewing the three 4BA nuts. The milled nut on the lid is a handle for removing it and is not to be unscrewed. Upon removal of this cover the slide wire and contacts may be seen and if necessary should be carefully cleaned.

METER ADJUSTMENT

The monitoring circuit is correctly adjusted before leaving the factory. If after long use it becomes inaccurate, it may be corrected by means of the preset potentiometer provided. This potentiometer is situated close to the modulation switch.

The most accurate method of adjusting the R.F. metering is by use of a calibrated crystal voltmeter with input impedance of 75 ohms, which will indicate 100mV. With 100mV. into the calibrating meter the instrument meter reading is adjusted to the black line.